



FORM 2.T HAZARDOUS AIR POLLUTANT WORKSHEET

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INSTRUCTIONS – FORM 2.T HAZARDOUS AIR POLLUTANT WORKSHEET

This form should be completed to report the emissions of any Hazardous Air Pollutant (HAP) regulated under Section 112 (b) of the 1990 revisions to the Clean Air Act. Form 2.T should be used to list all HAP(s) emitted from a single emission point. Those HAPs that are either Volatile Organic Compounds (VOC) or Particulate Matter less than 10 microns (PM10) should be reported as VOCs or PM10 on Form 2.0 **and** on Form 2.T. For HAPs that are not VOCs or PM10, use Form 2.t to generate a HAP emission factor and report these emissions on Form 2.0.

Beginning with the 2002 EIQ submittal, facilities will be asked to report controlled HAP emissions on Form 2.T, as well as the uncontrolled HAP emissions they have reported in past years. This will allow companies, if they choose, to report specific control efficiencies for individual HAPs.

The HAPs are separated into two groups or categories with different emission point level reporting thresholds based on the toxicity of the specific HAP chemical. The first group (Category 1) consists of a small set of the most hazardous or toxic chemicals that have an annual **emission point reporting level of 20 pounds** or more emitted per year. If a total of 20 lbs. or more of Category 1 HAPs is emitted from an emission point, then **all** HAP emissions must be reported on a Form 2.t.

Example: A facility emits 100 lbs. of toluene, 100 lbs of xylene, and 75 lbs. of hexane. All three HAP chemicals would be listed on Form 2.T. Even though each air pollutant is lower than 200 lbs., the sum of the emissions for this point exceeds the threshold of 200 lbs.

Attached to this worksheet instruction set is a list of the HAPs regulated under the Clean Air Act. This list provides the CAS (Chemical Abstract Service Registry Number), indicates if the chemical should be reported as a VOC or PM10, and identifies some of the possible synonyms for each HAP.

PLEASE NOTE:

MANY OF THE HAPS FOR WHICH EMISSIONS ARE TO BE REPORTED SHOULD HAVE ALREADY BEEN REPORTED, EITHER AS A VOC (Volatile Organic Compound) OR AS PM10 (Particulates) ON A FORM 2.0. BE CAREFUL NOT TO COUNT THE AMOUNT OF HAPS RELEASED MORE THAN ONCE FOR THE PURPOSE OF CALCULATING THE EMISSIONS FEE.

Each row on Form 2.T should be used to report the required information for a single HAP at a point. Use special care when entering information in Column 6, "Uncontrolled Emissions Reported as HAPs (Lbs/Yr)". Supplying information in Column 6 for emissions already reported as a VOC or PM10 will lead to the HAP emissions being counted twice and result in the emissions fee payment being higher than required. If worksheets are not being used to calculate the emissions, documentation should be provided to verify the emission figures. Include all emission point numbers on documentation.

Complete **Facility Name, FIPS County Number, Plant Number and Year of Data.**

Point Number: This is the unique identification number for each specific process. This identification number must match the point number entered on Form 1.1 - Process Flow Diagram, Form 1.2 - Summary of Emission Points and Form 2.0 - Emission Point Information.

Source Classification Code (SCC): List the code that identifies the type of process associated with this emission point.

1) HAZARDOUS AIR POLLUTANT (HAP) CHEMICAL

A single box in Column 1 should be used to list the most common chemical name or synonym for a HAP chemical that is being reported.

2) CAS NUMBER

The Chemical Abstract Service Registry (CAS) Number is a unique number for each chemical or group of chemicals. Enter the CAS number for the specific HAP chemical used or handled in a box in Column 2. The HAPs List provides a list of the CAS Number(s) for each HAP or group of HAPs regulated under the Clean Air Act. A CAS Number **must** accompany each individual HAP listed on Form 2.T.

3) AMOUNT USED OR HANDLED (LBS/YR)

Enter the amount of the HAP chemical that was used or handled at this point. The amount of HAP chemical entered should be reported in pounds per year.

4) UNCONTROLLED AMOUNT EMITTED (LBS/YR)

Enter the amount of the HAP chemical that was actually emitted from the point, or if control equipment is present - enter the amount emitted before control equipment reductions are applied. Be sure to enter this information in either Column 5 or 6 also. The emission figure should be in pounds of the HAP chemical emitted per year.

Documentation (worksheets, etc.) needs to be provided if the uncontrolled amount emitted does not equal the amount used or handled provided in Column 3. The documentation needs to explain the differences between Columns 3 and 4: whether it is a mass balance calculation, if material is being shipped as hazardous waste, or if a portion of the HAP chemical is being retained in the final product, etc.

5) UNCONTROLLED EMISSIONS REPORTED AS A VOC OR PM10 (LBS/YR)

If a HAP chemical at this point has already been reported as PM10 or VOC, enter the HAP emissions in pounds per year. This will ensure that the HAP chemical is being emitted is not double counted toward the emissions fee. The total amount of all HAP chemicals at this point should be summed and entered in the **HAP Emission Totals** box provided at the bottom of Block 5. The HAP emission total should be calculated in pounds emitted per year.

6) UNCONTROLLED EMISSIONS REPORTED AS HAPs (LBS/YR)

Enter the amount of HAP emissions at this point that have not been reported as VOC or PM10. Sum all the entries in Column 6 and record that total in the **HAP Emission Totals** box provided at the bottom of Block 6. This total figure must be in pounds emitted per year.

7) HAP CONTROL DEVICES

List any control devices by device number (i.e. CD01, CD02, etc.) that control the listed HAP chemical.

8) CONTROL EFFICIENCY (%)

If a control device is present, please enter the control efficiency for each HAP chemical that has emissions. This refers to the **overall** control efficiency for the HAP chemical. (See Form 2.0 instructions for further explanation and an example)

9) ACTUAL EMISSIONS REPORTED AS VOC OR PM10 (LBS/YR)

This is the actual amount in pounds per year of the toxic emitted reported as a VOC or PM10 at the emission point described. All figures should be rounded to the nearest hundredth of a pound.

ACTUAL EMITTED REPORTED AS VOC OR PM10 =

$(\text{UNCONTROLLED EMISSIONS REPORTED AS VOC OR PM10}) \times (100 - \text{CONTROL EFFICIENCY}) / 100$

10) ACTUAL EMISSIONS REPORTED AS HAPs (LBS/YR)

This is the actual amount in pounds per year of the toxic emitted reported as a HAP at the emission point described. All figures should be rounded to the nearest hundredth of a pound.

ACTUAL EMITTED REPORTED AS HAPs =

$(\text{UNCONTROLLED EMISSIONS REPORTED AS HAPs}) \times (100 - \text{CONTROL EFFICIENCY}) / 100$

11) HAP EMISSION FACTOR

Divide the HAP EMISSIONS NOT REPORTED total (from column 6) by the Annual Throughput and enter this number in the **HAP EMISSIONS FACTOR** box of this form and the corresponding box in Column 7 of Form 2.0. (The annual throughput component in the above calculation will be found in Block 4 of Form 2.0). This is the uncontrolled emission factor. An overall HAP control efficiency will be listed on Form 2.0 if applicable.

NOTE: If you are reporting different control efficiencies for different HAPs on Form 2.T, then the following formula should be used for Overall Control Efficiency on Form 2.0 (block 9 of Form 2.0):

$100 \times [1 - (\text{Sum of Actual Emissions Reported as HAPs on Form 2.T}) / (\text{Throughput} \times \text{Uncontrolled HAP Emission Factor})]$

SECTION 112 – HAZARDOUS AIR POLLUTANTS (5/4/99 UPDATE)

The HAPs (Hazardous Air Pollutants) are separated into two categories based on the toxicity of each chemical. Each category has a different emission point reporting level. If a facility emits more than the reporting level for at least one HAP from a single emission point then the amount used and emitted must be reported on the Emission Inventory Questionnaire. NOTE: Criteria pollutant emissions should also be included when checking on the 200 pound reporting level.

Emission reporting levels are: Category 1 HAPs - 20 Lbs/Yr;
 Category 2 HAPs - 200 Lbs/Yr

CHEMICAL ABSTRACTS SERVICE NUMBER	POLLUTANT	VOC	PM
CATEGORY 1: HAZARDOUS AIR POLLUTANTS			
20-01-9	Arsenic Compounds (inorganic including arsine)	No	Yes
1332-21-4	Asbestos	No	Yes
20-06-4	Chromium Compounds	No	Yes
302-01-2	Hydrazine	Yes	No
1746-01-6	2, 3, 7, 8 - Tetrachlorodibenzo-p-dioxin	No	No
CATEGORY 2: HAZARDOUS AIR POLLUTANTS			
75-07-0	Acetaldehyde	Yes	No
60-35-5	Acetamide	Yes	No
75-05-8	Acetonitrile	No	No
98-86-2	Acetophenone	Yes	No
53-96-3	2-Acetylaminofluorene	Yes	No
107-02-8	Acrolein	Yes	No
79-06-1	Acrylamide	Yes	No
79-10-7	Acrylic acid	Yes	No
107-13-1	Acrylonitrile	Yes	No
107-05-1	Allyl chloride	Yes	No
92-67-1	4-Aminobiphenyl	Yes	No
62-53-3	Aniline	Yes	No
90-04-0	o-Anisidine	Yes	No
71-43-2	Benzene (including benzene from gasoline)	Yes	No
92-87-5	Benzidine	Yes	No
98-07-7	Benzotrichloride	Yes	No
100-44-7	Benzyl chloride	Yes	No
92-52-4	Biphenyl	Yes	No
117-81-7	Bis (2-ethylhexy1) phthalate (DEHP)	Yes	No
542-88-1	Bis (chloromethyl) ether	Yes	No
75-25-2	Bromoform	No	No
106-99-0	1, 3-Butadiene	Yes	No
156-62-7	Calcium cyanamide	Yes	No
133-06-2	Captan	Yes	No
63-25-2	Carbaryl	Yes	No
75-15-0	Carbon disulfide	Yes	No
56-23-5	Carbon tetrachloride	Yes	No

CATEGORY 2: HAZARDOUS AIR POLLUTANTS (CONTINUED)

463-58-1	Carbonyl sulfide	Yes	No
120-80-9	Catechol	Yes	No
133-90-4	Chloramben	Yes	No
57-74-9	Chlordane	Yes	No
7782-50-5	Chlorine	No	No
79-11-8	Chloracetic acid	Yes	No
532-27-4	2-Chloroacetophenone	Yes	No
108-90-7	Chlorobenzene	Yes	No
510-15-6	Chlorobenzilate	Yes	No
67-66-3	Chloroform	No	No
107-30-2	Chloromethyl methyl ether	Yes	No
126-99-8	Chloroprene	Yes	No
1319-77-3	Cresol/Cresylic acid (mixed isomers)	Yes	No
95-48-7	o-Cresol	Yes	No
108-39-4	m-Cresol	Yes	No
106-44-5	p-Cresol	Yes	No
98-82-8	Cumene	Yes	No
94-75-7	2,4-D (2,4-Dichlorophenoxyacetic Acid) (including salts and esters)	Yes	No
72-55-9	DDE (1,1-dichloro-2,2-bis (p-chlorophenyl) ethylene)	Yes	No
334-88-3	Diazomethane	Yes	No
132-64-9	Dibenzofuran	Yes	No
96-12-8	1,2-Dibromo-3-chloropropane	Yes	No
84-74-2	Dibutyl phthalate	Yes	No
106-46-7	1,4-Dichlorobenzene	Yes	No
91-94-1	3,3'-Dichlorobenzidine	Yes	No
111-44-4	Dichloroethyl ether (Bis [2-chloroethyl] ether)	Yes	No
542-75-6	1,3-Dichloropropene	Yes	No
62-73-7	Dichlorvos	Yes	No
111-42-2	Diethanolamine	Yes	No
64-67-5	Diethyl sulfate	Yes	No
119-90-4	3,3'-Dimethoxybenzidine	Yes	No
60-11-7	4-Diemethylaminoazobenzene	Yes	No
121-69-7	N,N-Dimethylaniline	Yes	No
119-93-7	3,3'-Dimethylbenzidine	Yes	No
79-44-7	Dimethylcarbamoyl chloride	Yes	No
68-12-2	N,N-Dimethylformamide	Yes	No
57-14-7	1,1-Dimethylhydrazine	Yes	No
131-11-3	Dimethyl phthalate	Yes	No
77-78-1	Dimethyl sulfate	Yes	No
534-52-1	4,6-Dinitro-o-cresol (including salts)	Yes	No

CATEGORY 2: HAZARDOUS AIR POLLUTANTS (CONTINUED)

51-28-5	2,4-Dinitrophenol	Yes	No
121-14-2	2,4-Dinitrotoluene	Yes	No
123-91-1	1,4-Dioxane (1,4-Diethyleneoxide)	Yes	No
122-66-7	1,2-Diphenylhydrazine	Yes	No
106-89-8	Epichlorohydrin (1-Chloro-2, 3-epoxypropane)	Yes	No
106-88-7	1,2-Epoxybutane	Yes	No
140-88-5	Ethyl acrylate	Yes	No
100-41-4	Ethylbenzene	Yes	No
51-79-6	Ethyl carbamate (Urethane)	Yes	No
75-00-3	Ethyl chloride (Chloroethane)	Yes	No
106-93-4	Ethylene dibromide (Dibromoethane)	No	No
107-06-2	Ethylene dichloride (1,2-Dichloroethane)	No	No
107-21-1	Ethylene glycol	Yes	No
151-56-4	Ethyleneimine (Aziridine)	Yes	No
75-21-8	Ethylene oxide	Yes	No
96-45-7	Ethylene thiourea	Yes	No
75-34-3	Ethylidene dichloride (1,1-Dichloroethane)	Yes	No
50-00-0	Formaldehyde	Yes	No
76-44-8	Heptachlor	Yes	No
118-74-1	Hexachlorobenzene	Yes	No
87-68-3	Hexachlorobutadiene	Yes	No
58-89-9	1,2,3,4,5,6-Hexachlorocyclohexane (all stereo isomers, including lindane)	Yes	No
77-47-4	Hexachlorocyclopentadiene	Yes	No
67-72-1	Hexachloroethane	Yes	No
822-06-0	Hexamethylene diisocyanate	Yes	No
680-31-9	Hexamethylphosphoramide	Yes	No
110-54-3	Hexane	Yes	No
7647-01-0	Hydrochloric acid (Hydrogen chloride)	No	No
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)	No	No
123-31-9	Hydroquinone	Yes	No
78-59-1	Isophorone	Yes	No
108-31-6	Maleic anhydride	Yes	No
67-56-1	Methanol	Yes	No
72-43-5	Methoxychlor	Yes	No
74-83-9	Methyl bromide (Bromomethane)	No	No
74-87-3	Methyl chloride (Chloromethane)	No	No
71-55-6	Methyl chloroform (1,1,1-Trichloroethane)	No	No
78-93-3	Methyl ethyl ketone (2-Butanone)	Yes	No
60-34-4	Methylhydrazine	Yes	No
74-88-4	Methyl iodide (Iodomethane)	Yes	No

CATEGORY 2: HAZARDOUS AIR POLLUTANTS (CONTINUED)

108-10-1	Methyl isobutyl ketone (Hexone)	Yes	No
624-83-9	Methyl isocyanate	Yes	No
80-62-6	Methyl methacrylate	Yes	No
1634-04-4	Methyl tert-butyl ether	Yes	No
101-14-4	4,4'-Methylenebis (2-chloroaniline)	Yes	No
75-09-2	Methylene chloride (Dichloromethane)	No	No
101-68-8	4,4'-Methylenediphenyl diisocyanate (MDI)	Yes	No
101-77-9	4,4'-Methylenedianiline	Yes	No
91-20-3	Naphthalene	Yes	No
98-95-3	Nitrobenzene	Yes	No
92-93-3	4-Nitrobiphenyl	No	No
100-02-7	4-Nitrophenol	No	No
79-46-9	2-Nitropropane	Yes	No
684-93-5	N-Nitroso-N-methylurea	Yes	No
62-75-9	N-Nitrosodimethylamine	Yes	No
59-89-2	N-Nitrosomorpholine	Yes	No
56-38-2	Parathion	Yes	No
82-68-8	Pentachloronitrobenzene (Quintobenzene)	Yes	No
87-86-5	Pentachlorophenol	Yes	No
108-95-2	Phenol	Yes	No
106-50-3	p-Phenylenediamine	Yes	No
75-44-5	Phosgene	Yes	No
7803-51-2	Phosphine	No	No
7723-14-0	Phosphorus	No	No
85-44-9	Phthalic anhydride	Yes	No
1336-36-3	Polychlorinated biphenyls (Aroclors)	Yes	No
1120-71-4	1,2-Propane sultone	Yes	No
57-57-8	beta-Propiolactone	No	No
123-38-6	Propionaldehyde	No	No
114-26-1	Propoxur (Baygon)	Yes	No
78-87-5	Propylene dichloride (1,2-Dichloropropane)	Yes	No
75-56-9	Propylene oxide	Yes	No
75-55-8	1,2-Propylenimine (2-Methylaziridine)	Yes	No
91-22-5	Quinoline	Yes	No
106-51-4	Quinone (p-Benzoquinone)	No	No
100-42-5	Styrene	No	No
96-09-3	Styrene oxide	No	No
79-34-5	1,1,2,2-Tetrachloroethane	Yes	No
127-18-4	Tetrachloroethylene (Perchloroethylene)	No	No
7550-45-0	Titanium tetrachloride	No	No

CATEGORY 2: HAZARDOUS AIR POLLUTANTS (CONTINUED)

108-88-3	Toluene	Yes	No
95-80-7	Toluene-2,4-diamine	Yes	No
584-84-9	2,4-Toluene diisocyanate	Yes	No
95-53-4	o-Toluidine	Yes	No
8001-35-2	Toxaphene (chlorinated camphene)	Yes	No
120-82-1	1,2,4-Trichlorobenzene	Yes	No
79-00-5	1,1,2-Trichloroethane	Yes	No
79-01-6	Trichloroethylene	Yes	No
95-95-4	2,4,5-Trichlorophenol	Yes	No
88-06-2	2,4,6-Trichlorophenol	Yes	No
121-44-8	Triethylamine	Yes	No
1582-09-8	Trifluralin	Yes	No
540-84-1	2,2,4-Trimethylpentane	Yes	No
108-05-4	Vinyl acetate	Yes	No
593-60-2	Vinyl bromide	Yes	No
75-01-4	Vinyl chloride	Yes	No
75-35-4	Vinylidene chloride (1,1-Dichloroethylene)	Yes	No
1330-20-7	Xylenes (mixed isomers)	Yes	No
95-47-6	o-Xylene	Yes	No
108-38-3	m-Xylene	Yes	No
106-42-3	p-Xylene	Yes	No
20-00-8	Antimony Compounds	No	No
20-03-1	Beryllium Compounds	No	No
20-04-2	Cadmium Compounds	No	No
20-07-5	Cobalt Compounds	No	No
8007-15-2	Coke Ove Emissions	No	No
20-09-7	Cyanide Compounds ¹	No	No
20-10-0	Glycol ethers ²	Yes	No
20-11-1	Lead Compounds	No	No
20-12-2	Manganese Compounds	No	No
20-13-3	Mercury Compounds (Alkyl & Aryl)	Yes	No
20-13-3	Mercury Compounds (Inorganic)	No	No
TP-14	Fine mineral fibers ³	No	No
20-14-4	Nickel Compounds	No	No
TP-15	Polycyclic Organic Matter ⁴	Yes	No
TP-16	Radionuclides (including radon) ⁵	No	No
20-16-6	Selenium Compounds	No	No

INSTRUCTIONS – FORM 2.T HAZARDOUS AIR POLLUTANT WORKSHEET

NOTE: For all listings above which contain the word “compounds” and for glycol ethers, the following applies: Unless otherwise specified, these listings are defined as including any unique chemical substance that contains the named chemical (i.e., antimony, arsenic, etc.) as part of that chemical's infrastructure.

- 1 X'CN where X = H' or any other group where a formal dissociation may occur. For example, KCN or CA (CN) 2.
- 2 On January 12, 1999 (FR64:1780), EPA proposed to modify the definition of glycol ethers to exclude surfactant alcohol ethoxylates and their derivatives (SAED). This proposal was based on EPA's finding that emissions, ambient concentrations, bioaccumulation, or deposition of SAED may not reasonably be anticipated to cause adverse human health or environmental effects. EPA also proposed to make conforming changes in the definition of glycol ethers with respect to the designation of hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The proposal reads as follows:

“The definition of the glycol ethers category of hazardous air pollutants, as established by 42 U.S.C. 7412(b) (1) includes mono- and diethers of ethylene glycol, diethylene glycol, and triethylene glycol R-(OCH₂CH₂)_n-OR’

Where:

n = 1, 2, or 3

R = alkyl C7 or less, or phenyl or alkyl substituted phenyl

R' = H, or alkyl C7 or less, or carboxylic acid ester, phosphate, nitrate, or sulfonate.”

3 (Under Review)

4 (Under Review)

5A type of atom which spontaneously undergoes radioactive decay.